CDC ASSESSMENT OF RISKS TO THE GLOBAL POLIO ERADICATION INITIATIVE (GPEI) STRATEGIC PLAN 2010-2012

Global Immunization Division and Division of Viral Diseases, National Center for Immunization and Respiratory Diseases, Centers for Disease Control and Prevention

Atlanta, Georgia USA

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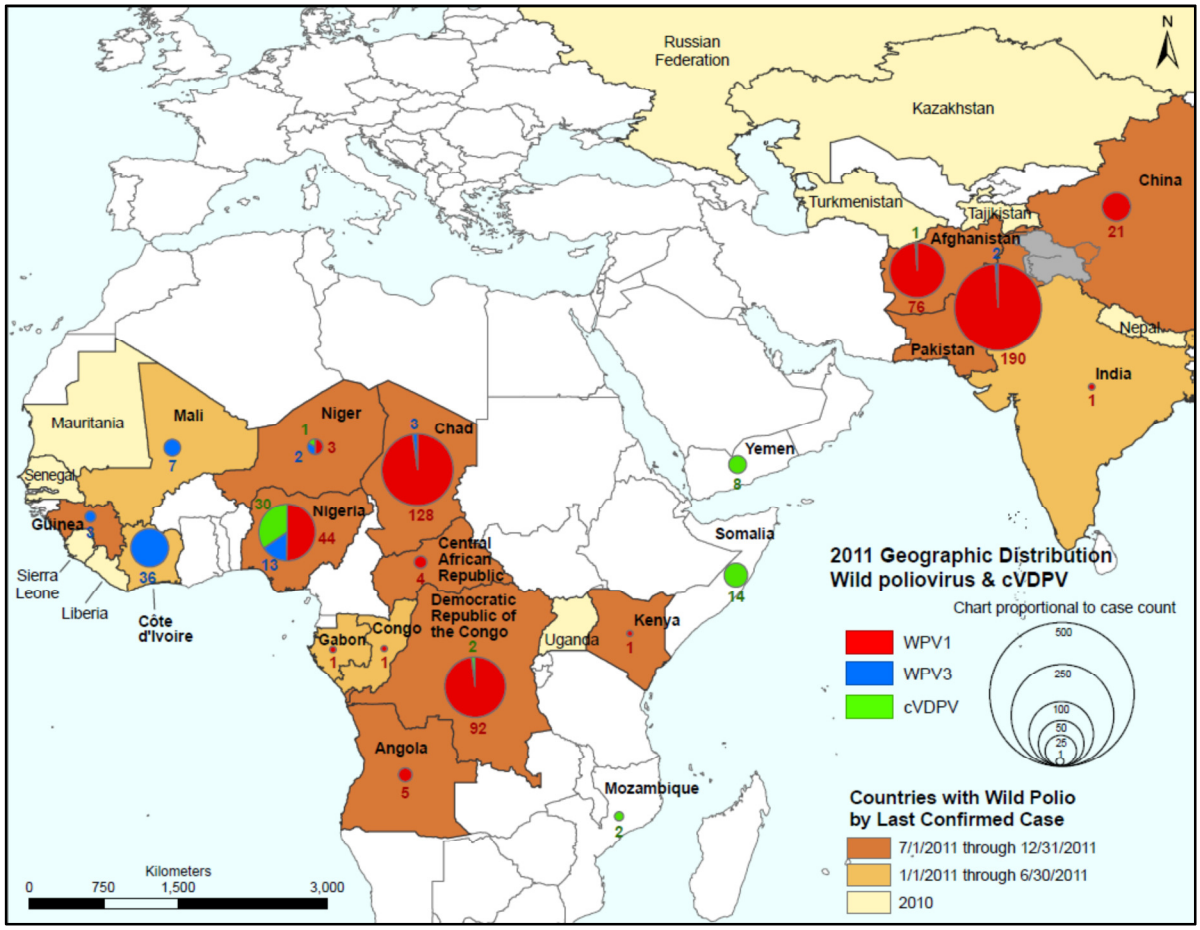
2011 Fourth Quarter Report

Wild poliovirus (WPV) cases and circulating vaccine-derived polioviruses (cVDPV), onset January–December 2011 (data as of 12 January 2012)



In addition to quarterly assessment of risks to the global polio eradication initiative that began September 2010, beginning in 2011, CDC reports quarterly on the Strategic Plan Major Process Indicators (MPIs) of the Global Polio Eradication Initiative (GPEI) Strategic Plan for 2010–2012. Previous reports and the CDC assessments of risk to the GPEI are available at *http://www.polioeradication.org/Dataandmonitoring/Polioeradicationtargets/Riskassessments.aspx*.

This 4th Quarter 2011 CDC Assessment of Risks to the GPEI Strategic Plan 2010-2012 estimates risk of failure to detect and interrupt wild poliovirus (WPV) transmission in each of the polio-affected countries on the basis of indicators in the 2011 MPIs applied during the previous 12 months. In addition to the risk assessment, this report will also briefly indicate the outcome of the 2010 and 2011 MPIs by using symbols. The symbol key for each country's outcome for the 2010 and 2011 MPIs is:

- Fully achieved in 2010 or 2011
- Not achieved in 2010 or 2011
- No data to assess

NOTE

Independent monitoring (IM) of supplementary immunization activities (SIAs) has provided questionable high "coverage" estimates in areas that continue to have WPV transmission. Even with the discordance of these findings, we believe that IM data can still be useful in identifying areas of highest concern for subsequent action in many settings. We are concerned that IM results that indicate low SIA coverage (even those showing an underestimated proportion of missed children) are not triggering corrective actions.

Lot quality assurance sampling (LQAS) is being promoted as a tool for evaluating IM results and is being considered as a possible replacement for IM. In many settings, LQAS results indicate a higher proportion of missed children than estimated by IM. We believe that, in many areas, the current interpretation of LQAS[1] results is misleading and is allowing ongoing low SIA "coverage" to be overlooked (i.e., too high a proportion of areas "pass" LQAS and are considered to have achieved adequate "coverage").

At present, higher quality implementation of the LQAS strategy has been observed because fewer, and more highly trained, monitors are involved in its implementation. However, if the LQAS method is scaled up for widespread use, the quality of its implementation, and therefore the validity its findings, may suffer.

In the interest of consistency between our quarterly reports, our current report relies on the major process indicators using IM data, despite the variability in IM quality.

1 The use of LQAS to assess polio immunization coverage in Nigeria, http://www.polioeradication.org/Research/PolioPipeline/No5Winter2010/TheuseofLQAS.aspx, accessed on January 06, 2012

EXECUTIVE SUMMARY

Each quarter, CDC assesses the risks of failure to detect and interrupt wild poliovirus (WPV) transmission in affected countries and progress toward achieving 2011 Major Process Indicators (MPIs) using data collected over the previous 12 months. This report represents a provisional cross-section of information through the end of the 4th quarter 2011. Surveillance data include onset of paralysis 28 December 2010 – 27 December 2011; laboratory results as of 12 January 2012 are complete for cases with onset in early-December 2011.

Endemic countries		Date of last WPV	Current Quarter Risk Assessment			3rd Qrt. Report
			Immunization performance (strong, intermediate, weak)	Surveillance performance (strong, intermediate, weak)	Overall risk of failure to detect and interrupt WPV transmission	Overall risk of failure to detect and interrupt WPV transmission
1	Afghanistan	16-Dec-11	Weak	Intermediate	High	High
2	India	13-Jan-11	Strong	Intermediate	Low	Low
3	Nigeria	02-Dec-11	Intermediate	Intermediate	Moderate	Moderate
4	Pakistan	23-Dec-11	Weak	Intermediate	High	High

Endemic countries: In India, the latest observed WPV type 3 (WPV3) case had onset 22 October 2010 and the latest WPV type 1 (WPV1) case had onset 13 January 2011. This historic lack of recent cases provides major impetus for GPEI. India has very high rates of non-polio acute flaccid paralysis (NPAFP) sub-nationally; however, because some states have suboptimal MPIs, surveillance performance is intermediate. Although India remains at low risk of failure to detect and interrupt WPV transmission by the end of 2012, the potential for undetected low-level transmission and importation remains. In Nigeria, more WPV cases have been detected during this period of 2011 than in the same period in 2010 and several foci of transmission remain. Nigeria remains at moderate risk of failure to detect and interrupt WPV transmission by the end of 2012. However, given the security and programmatic challenges, assessed risk of failure may underestimate the real risk. In Afghanistan, access problems remain and limit progress. WPV1 transmission is extensive in Pakistan in 2011. Expanded and increased transmission in both Afghanistan and Pakistan in 2011 indicates that both remain at high risk of failure to detect and interrupt WPV transmission by the end of 2012.

Re-established countries		Date of last WPV	Current Quarter Risk Assessment			3rd Qrt. Report
			Immunization performance (strong, intermediate, weak)	Surveillance performance (strong, intermediate, weak)	Overall risk of failure to detect and interrupt WPV transmission	Overall risk of failure to detect and interrupt WPV transmission
1	Angola	07-Jul-11	Intermediate	Intermediate	Moderate	High
2	Chad	19-Nov-11	Weak	Weak	High	High
3	Democratic Republic of Congo	28-Nov-11	Intermediate	Weak	High	High
4	Sudan	27-Jun-09	Intermediate	Intermediate	Moderate	Moderate

Countries with re-established transmission: South Sudan and Sudan have reported no WPV cases since June 2009 and no related WPV1 has been detected since environmental sampling in Aswan, Egypt, in December 2010. Meeting the MPI for SIA coverage in only some states, the risk of failure in South Sudan (and Sudan) remains moderate since the potential for undetected low-level transmission and importation remains. In Angola, immunization performance has improved to intermediate, and the risk of failing to detect and interrupt transmission has improved to moderate. Chad continues to have a high risk of failing to detect and interrupt

transmission, with continued weak immunization and surveillance performance, and widespread WPV transmission. Although case numbers declined in the second half of 2011, the Democratic Republic of the Congo (DRC) continues to have a high risk of failing to detect and interrupt transmission, with intermediate immunization performance and continued weak surveillance performance; stool collection remains poor.

		Importation / importation-belt countries (virus within the last 12 months)	Serotype	Date of last WPV	Current Quarter Risk Assessment			3rd Qrt. Report
					Immunization performance (Strong, Intermediate, Weak)	Surveillance performance (Strong, Intermediate, Weak)	Overall risk of failure to detect and interrupt WPV transmission	Overall risk of failure to detect and interrupt WPV transmission
Countries with virus last 12 months	1	Central African Republic	P1	08-Dec-11	Intermediate	Intermediate	Moderate	Moderate[1]
	2	Niger	P1	21-Nov-11	Strong	Weak	Moderate	Moderate
			P3	30-Oct-11				
	3	China[2]	P1	09-Oct-11				
	4	Guinea	P3	03-Aug-11	Strong	Weak	Moderate	Moderate
	5	Kenya	P1	30-Jul-11	Intermediate	Intermediate	Moderate	High
	6	Côte d'Ivoire	P3	24-Jul-11	Strong	Weak	Moderate	Moderate
	7	Mali	P3	23-Jun-11	Strong	Intermediate	Low	Moderate
	8	Congo	P1	22-Jan-11	Intermediate	Weak	High	High
	9	Gabon	P1	15-Jan-11	Weak	Weak	High	High

[1] No evidence of WPV circulation in > 6 months (refer to methods section)

[2] Data required for CDC's risk assessment algorithm are not available

Countries with imported cases: Central African Republic had a new WPV1 outbreak in the north that resulted from importation from Chad. The risk of failure to detect and interrupt WPV transmission within 6 months of the Central African Republic outbreak is moderate. Niger had multiple importations related to viruses from Chad and Nigeria, and circulation of all three poliovirus serotypes (WPV1, WPV3, and type 2 cVDPV). The risk of failure to detect and interrupt WPV transmission in Niger is moderate. Kenya's risk of failure is moderate based on intermediate immunization and surveillance performance; no new cases have been detected since July 2011. Although no new cases have occurred in China's explosive outbreak since October 2011, no surveillance or immunization data are available to assess China's risk of failure to detect and interrupt WPV transmission. A large outbreak of WPV3 occurred throughout Côte d'Ivoire with less genetic linkage than expected. Based on strong immunization but weak surveillance performance, the risk of failure to detect and interrupt WPV transmission within 6 months of outbreak confirmation remains moderate there as well as in Guinea. Because of suboptimal immunization performance and weak surveillance performance in Congo and Gabon, the risks of failure remains high, although no WPV1 cases have been detected in either since January.

Conclusions: Major changes from the 3nd Quarter 2011 CDC Assessment of Risks and notable findings include: 1) India has gone one year without a reported case and continues to have a low risk of failure; 2) the last WPV3 case in West Africa (Guinea 3 August) is a sign of approaching control; 3) in the fourth quarter alone, Nigeria, Chad, and the Democratic Republic of the Congo exported virus to neighboring countries; 4) due to increased civil unrest in Nigeria the assessed risk of failure (moderate) may underestimate the real risk; and 5) although many challenges remain, Pakistan and Nigeria represent the greatest threats to interrupting global WPV transmission by the end of 2012.

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ACRONYMS AND ABBREVIATIONS

AFP	acute flaccid paralysis
bOPV	bivalent (types 1 and 3) oral poliovirus vaccine
CDC	U.S. Centers for Disease Control and Prevention
cVDPV	circulating vaccine-derived poliovirus
GPEI	Global Polio Eradication Initiative
IM	independent monitoring
mOPV	monovalent oral poliovirus vaccine, either type 1 (mOPV1) or type 3 (mOPV3)
MPI	major process indicator
NPAFP	non-polio acute flaccid paralysis
OPV	oral poliovirus vaccine
Pol3	coverage with three doses of OPV by 1 year of age
SIA	supplementary immunization activity
tOPV	trivalent oral poliovirus vaccine
UNICEF	United Nations Children's Fund
VDPV	vaccine-derived poliovirus
WHO	World Health Organization
WPV	wild poliovirus

CDC Assessment of Risks to GPEI

INTRODUCTION

The U.S. Centers for Disease Control and Prevention (CDC) reports quarterly on the assessment of the risk of failure to detect and interrupt wild polio virus (WPV) transmission in affected countries during 2010-2012. The current CDC risk assessment is based on available surveillance data from 28 December 2010 - 27 December 2011 and laboratory and independent monitoring (IM) data available as of 12 January 2012. Surveillance/laboratory data are complete up through early-December 2011. The report assesses risk in countries in the Global Polio Eradication Initiative (GPEI) Strategic Plan for 2010–2012, countries with active outbreaks, and countries in the African "importation belt." CDC also reports quarterly on the Strategic Plan Major Process Indicators (MPIs); the 4th *Quarter 2011, Progress Report of the GPEI Major Process Indicators for 2011* was also issued on 24 January 2012. Detailed information for each country is provided in a "country profiles" supplement. The methods and data sources to assess surveillance and immunization performance were described in prior reports and are also provided in a supplement.[1] Although data from IM of supplementary immunization activities (SIAs) have been shown in many countries to underestimate SIA "coverage" in high-risk areas, relative to the results of alternative surveys of SIA "coverage" (lot quality assurance sampling [LQAS]), this report continues to consider IM data in the risk assessments.[2] .

Overall risk assessment

The overall assessment of a country's risk of failure to detect and interrupt WPV transmission (HIGH, MODERATE, or LOW) was primarily based on immunization performance assessment as reflected in the immunization MPI; surveillance performance was secondarily considered, as illustrated in the table below.

	IMMUNIZATION PERFORMANCE		
SURVEILLANCE PERFORMANCE	**WEAK**	**INTERMEDIATE**	**STRONG**
WEAK	HIGH	HIGH	MODERATE
INTERMEDIATE	HIGH*	MODERATE	LOW**
STRONG	HIGH*	MODERATE	LOW**

*If a country was initially assessed as having a HIGH risk of failure to detect and interrupt WPV transmission but its surveillance performance was assessed as STRONG or INTERMEDIATE and there was no evidence of WPV circulation in >12 months (>6 months if importation country/"importation belt"), overall risk was revised to MODERATE.

If an **endemic or re-established transmission country was initially assessed as having STRONG immunization performance and STRONG or INTERMEDIATE surveillance performance but there was evidence of WPV circulation within the last 6 months in ≥3 states/provinces, its overall risk was revised to MODERATE. If an **importation country** had STRONG immunization performance and STRONG or INTERMEDIATE surveillance performance but there was evidence of WPV circulation within the last 3 months and ≥3 months had elapsed from outbreak laboratory confirmation to the most recent case, its overall risk was revised to MODERATE.

[1] Both updated supplements are available at:
(http://www.polioeradication.org/Dataandmonitoring/Polioeradicationtargets/Riskassessments.aspx.)

[2] CDC questions the margin of error in the current way in which LGAS surveys have been implemented and interpreted.

RISK ASSESSMENT

Endemic Countries

GPEI Global Milestone: By the end-2011, cessation of all polio transmission in at least two of the four endemic countries (validated when ≥12 months without a case genetically linked to an indigenous virus):

Assessment: at risk for completion

- India: on track
- Afghanistan, Nigeria, and Pakistan: at risk for completion

AFGHANISTAN

Immunization				Surveillance			
12-month immunization indicator*	National		**Immunization Performance**	Percent of states / provinces with:		Virology	**Surveillance Performance**
% missed children in SIAs	POL3	0-dose		NPAFPR >= 2**	Adeq. Stools >= 80%**		
Weak	**66**	**4.3**	**Weak**	**100**	**100**	**Some**	**Intermediate**

* 12-month immunization indicator: Based upon Afghanistan's 2011 MPI for immunization but using available data from SIAs conducted during the previous 12 months (1 Jan 2011 – 31 Dec 2011). Additional details in the 4th Quarter 2011 Progress Report of the GPEI Process Indicators for 2011 and the Methods Supplement.

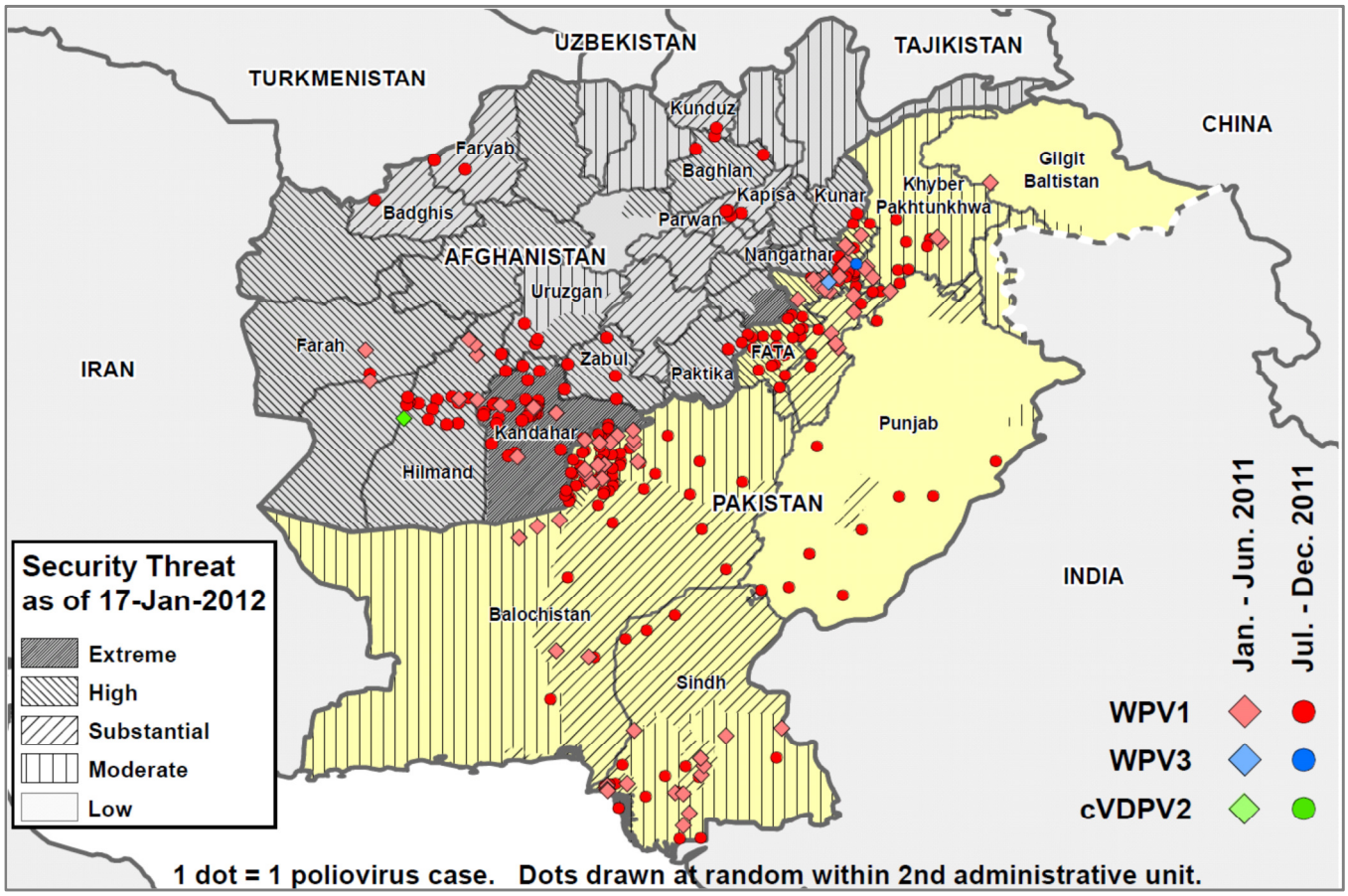
** based on the upper 90% confidence limit

Afghanistan has at a high risk of failure to detect and interrupt WPV transmission by the end of 2012. Onset of the latest WPV3 case was 11 April 2010 following predominant use of bivalent oral poliovirus vaccine (bOPV) in SIAs since December 2009. Only one case of circulating vaccine derived poliovirus (cVDPV) type 2 was confirmed in 2011. WPV1 transmission increased in 2011 relative to 2010, not only in the conflict-affected Southern Region but also in other areas of the country that have not had cases in recent years. In 2011 as of the time of this report, 76 WPV1 cases have been confirmed in Afghanistan; in 2010 25 cases (17 WPV1 and 8 WPV3) were confirmed. Because impediments to access continue in some border areas and in the conflict-affected Southern Region, immunization performance remains weak. Although the sub-national non-polio AFP (NPAFP) detection indicator is meeting the target in all states and the specimen collection is within acceptable limits, surveillance performance is assessed to be intermediate because of virologic evidence of some missed chains of transmission. WPV1 cases represent sustained independent transmission of lineages unique to Afghanistan, and cross-border transmission with Pakistan continues. The risk of failure for Afghanistan remains interrelated with that for Pakistan.

Current Quarter	3rd Qrt. Report
Overall risk of failure to detect and interrupt WPV transmission	Overall risk of failure to detect and interrupt WPV transmission
High	High

GPEI MPI	end-2010	<10% missed children during at least 4 SIAs in each of the 13 conflict-affected districts with persistent transmission in the Southern region
	end-2011	<10% missed children during at least 6 SIAs in each of the 13 conflict-affected districts with persistent transmission in the Southern region

Afghanistan and Pakistan: WPV and cVDPV cases, onset during 1 January – 31 December 2011 and United Nations Security Levels.



The Afghanistan / Pakistan map above raises important issues:

- The map highlights the association between extreme/high levels of security threat and transmission of poliovirus
- Throughout 2011, the largest number of cases has been along the border between the two countries
- Within the last 6 months:
    - cases are more widespread in both countries and are no longer as clustered along the border as during the prior 6-month period;
    - cases are increasingly being identified in areas, such as Punjab, with lower levels of security threat; and
    - unlike during the first half of 2011, there have been cases near Afghanistan's northern border, raising the risk of exportation to the neighboring countries of Turkmenistan, Uzbekistan, and Tajikistan.

PAKISTAN

Immunization						Surveillance			
12-month immunization indicator			National		Immunization Performance	Percent of states / provinces with:		Virology	Surveillance Performance
District: % missed children in SIAs*	% children with > 6 OPV doses**	Overall 12-month immunization indicator	POL3	0-dose		NPAFPR >= 2***	Adeq. Stools >= 80%***		
Weak	Weak	Weak	88	2.6	Weak	100	100	Some	Intermediate

* 12-month district immunization indicator: Based upon Pakistan's 2011 MPI for immunization (% missed children in SIAs) but using available data from SIAs conducted during the previous 12 months (1 Jan 2011 - 31 Dec 2011). Additional details in the 4th Quarter 2011 Progress Report of the GPEI Process Indicators for 2011 and Methods Supplement.

** >6 dose immunization indicator: Based upon Pakistan's 2011 MPI for immunization (>6 OPV doses in Sindh and Punjab) but using OPV dose information within NPAFP surveillance data from the previous 12 months (28 Dec 2010 - 27 Dec 2011). Additional details in the 4th Quarter 2011 Progress Report of the GPEI Process Indicators for 2011 and Methods Supplement.

*** based on the upper 90% confidence limit

Pakistan has at a high risk of failure to detect and interrupt WPV transmission by the end of 2012. After a WPV3 case with onset of 18 November 2010, there have been only 2 subsequent WPV3 cases detected in the security-affected Federally Administered Tribal Areas (FATA) (most recent with onset 27 September 2011), which suggests that WPV3 transmission could be interrupted in the near future; however, limited surveillance would hamper interpretation. Circulation of WPV1 in January–December 2011 has increased by 37% compared to the same period in 2010. Assessment of SIA monitoring during the last 12 months met the MPI 10% missed children criteria in Peshawar, Khyber Pakhtunkhwa (KP), but not the Quetta area of Balochistan. OPV dose history in children with NPAFP in Sindh and Punjab also did not meet the MPI criteria. Therefore, immunization performance remains weak. The risks of missing children in sub-populations during SIAs and through surveillance are high. Outside-the-house (market) survey results have not been reported for secure areas in Punjab, Singh, and Balochistan. Surveillance indicators meet standards at national and state levels; however, performance is assessed to be intermediate because of virologic evidence of chains of transmission missed by AFP surveillance; this evidence includes analysis of isolates from environmental surveillance. Environmental surveillance continues to detect WPV1 transmission in all major cities in all provinces. Emergency action plans, including a recent revision, are being implemented to address the serious weaknesses in immunization and surveillance performance in Pakistan but have yet to be fully implemented down to the district and union council levels. The extensive circulation of WPV1, suboptimal surveillance and the lack of evident progress in SIA implementation indicate that Pakistan poses a high risk to the success of the GPEI to interrupt all WPV transmission by end-2012.

Current Quarter	3rd Qrt. Report
Overall risk of failure to detect and interrupt WPV transmission	Overall risk of failure to detect and interrupt WPV transmission
High	High

GPEI MPI	end-2010	<15% missed children during at least 8 SIAs in every district of the Quetta area and the persistent transmission districts and agencies of KP and FATA
	end-2010	<10% missed children during at least 4 SIAs in every town of Karachi
	end-2011	<10% missed children during at least 8 SIAs in the Quetta area and in the persistent transmission districts and agencies of KP and FATA
	end-2011	>90% of children with >6 doses of OPV in Sindh and Punjab

INDIA

Immunization						Surveillance			
12-month immunization indicator *			National		Immunization Performance	Percent of states / provinces		Virology	Surveillance Performance
% missed children in SIAs in Bihar/UP	% missed children in SIAs in West Bengal	Overall 12-month immunization indicator	POL3	0-dose		NPAFPR >= 2**	Adeq. Stools >= 80%**		
Strong	**Strong**	**Strong**	**70**	**0.3**	**Strong**	**94.1**	**90.9**	**Little**	**Intermediate**

* 12-month immunization indicator: Since data were not yet available to assess India's 2011 MPI for immunization, based upon the two most recent SIAs conducted in Bihar, Uttar Pradesh (UP), and West Bengal. Additional details in Methods Supplement.

** based on the upper 90% confidence limit

India continues to have a low risk of failure to detect and interrupt WPV transmission by the end of 2012. More than a year has elapsed since the last confirmed cases of WPV (last confirmed WPV1 was 13 January 2011 [West Bengal]; last confirmed WPV3 was 22 October 2010 [Jharkhand]) and the last detection of WPV in environmental samples was November 2010 (week 45).

Immunization performance remains strong. In 2010, poliovirus type 1 sero-positivity was high in the tested populations in western Uttar Pradesh and central Bihar; preliminary results for 2011 indicate the same. Data indicate continued high SIA coverage in the general targeted population in Uttar Pradesh and Bihar (<1.1% missed children) and the most recently affected state (West Bengal, 4.8% missed children, including 5.2% in the areas around the 2011 case). Data also indicate ongoing improvements in reaching mobile and remote populations in SIAs consistently missing <6% of children in directed monitoring in each area and <3% in most areas; notably, in Gujarat, the proportion of children missed declined from 12% in the previous risk assessment to 8.5% in September and to 3.8% in November. Ensuring interruption of WPV transmission depends on simultaneously maintaining very high population immunity and continuing to improve coverage in specific migrant sub-populations. Surveillance performance overall is assessed as intermediate (noting, however, the very high NPAFP rates in most states). The criterion for ≥80% adequate specimen collection in each state was met in all but 4 of 33 states (Chhattisgarh, Dadra & Nagar Haveli, Haryana, and Rajasthan); indicators in Bihar, Uttar Pradesh, West Bengal, and Jharkhand remain strong.

Environmental sampling for polioviruses in Delhi and Mumbai detected WPVs through middle and late 2010 but detected none in 2011. Environmental sampling was extended to Patna in early 2011 and Kolkata in late 2011. The last WPV detected by environmental sampling in India was in Mumbai in late 2010. Environmental surveillance findings strongly supplement AFP surveillance findings of no detected WPV cases.

Current Quarter	3rd Qrt. Report
Overall risk of failure to detect and interrupt WPV transmission	Overall risk of failure to detect and interrupt WPV transmission
Low	**Low**

GPEI MPI	end-2010	>95% population immunity to type 1 polio in the persistent transmission areas of western Uttar Pradesh and central Bihar
	end-2011	>95% population immunity to type 1 and type 3 polio in the persistent transmission areas of western Uttar Pradesh and central Bihar

NIGERIA

Immunization						Surveillance			
12-month immunization indicator			National		Immunization Performance	Percent of states / provinces with:		Virology	Surveillance Performance
% children with ≥3 OPV doses*	State: % missed children in SIAs**	Overall 12-month immunization indicator	POL3	0-dose		NPAFPR >= 2***	Adeq. Stools >= 80%***		
Intermediate	**Intermediate**	**Intermediate**	**79**	**2.3**	**Intermediate**	**100**	**100**	**Some†**	**Intermediate**

* ≥3 dose immunization indicator: Based upon Nigeria's 2011 MPI for immunization (≥3 OPV doses) and using OPV dose information within NPAFP surveillance data from the previous 12 months (28 Dec 2010 - 27 Dec 2011). Additional details in the 4th Quarter 2011 Progress Report of the GPEI Process Indicators for 2011 and Methods Supplement.

**12-month state immunization indicator: Based upon Nigeria's new 2011 MPI for immunization (% missed children in SIAs) but using available data from SIAs conducted during the previous 12 months (1 Jan 2011 - 31 Dec 2011). Additional details in the 4th Quarter 2011 Progress Report of the GPEI Process Indicators for 2011 and Methods Supplement.

*** based on the upper 90% confidence limit

† significantly higher proportion of viruses without close genetic linkage in 2010 and 2011

Nigeria has a moderate risk of failure to detect and interrupt WPV transmission by the end of 2012. In comparison to 2010, in 2011 both the number of identified WPV1 cases (8 cases versus 44 thus far in 2011) and the number of affected districts (8 districts versus 30 thus far in 2011) increased. The number of affected states in each year was 8. Circulation of many genetic clusters of WPV1 continues. The number of WPV3 cases is unchanged (13 cases in 2010 versus 13 thus far in 2011).

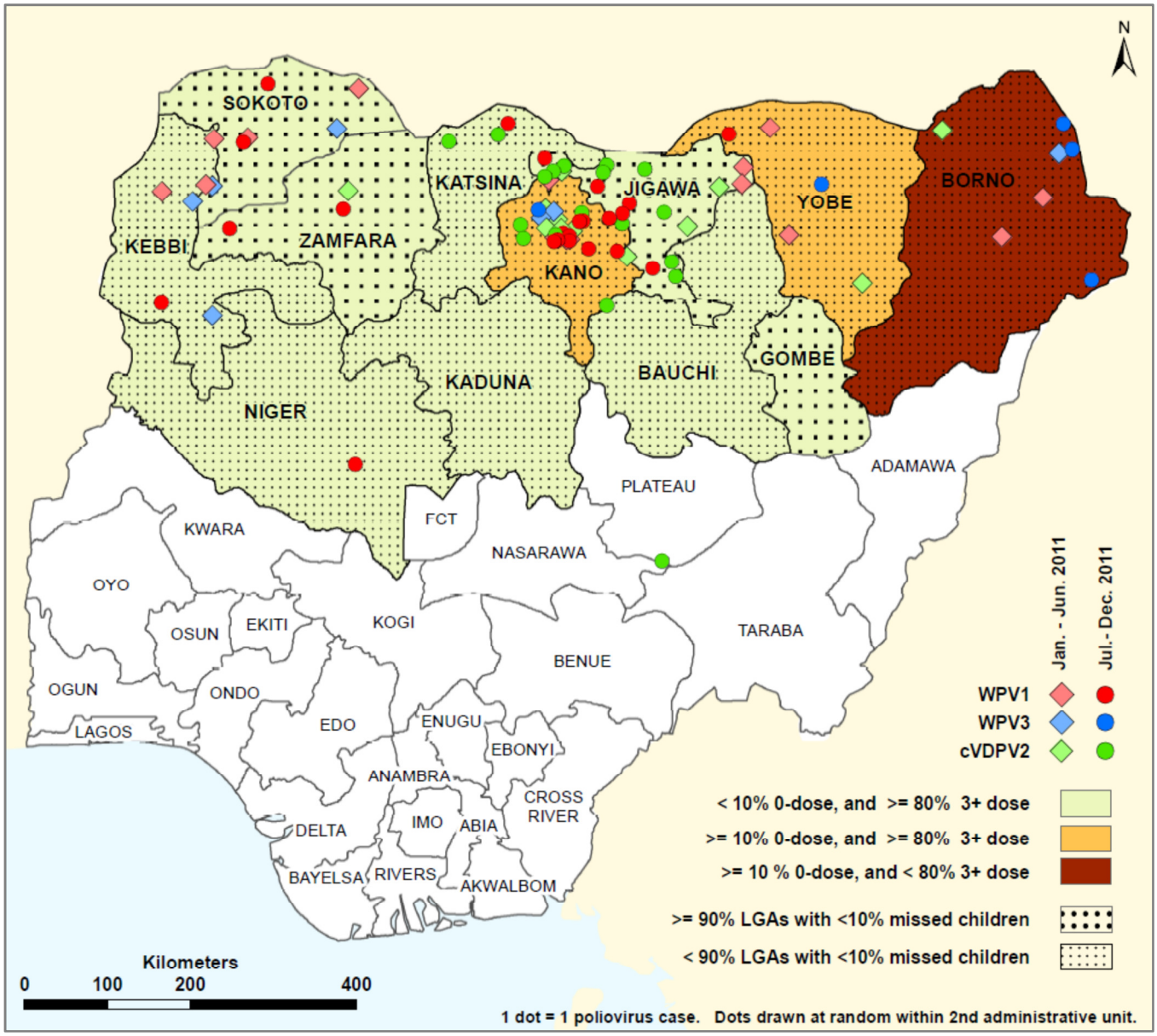
After improvement in SIA implementation in 2009, there is little evidence of improvement since early 2010. A high proportion of susceptible children in focal areas remain within the high-risk northern states where routine immunization and SIA coverage continue to be low and birth rates are high. By the applied MPI criteria and the supplemental indicators, immunization performance is intermediate over the previous 12 months. LQAS surveys have indicated that SIA "coverage" in surveyed areas is lower than what is reflected by IM data; this includes comparison with outside-the-house (market) survey IM results.

Despite multiple trivalent OPV SIA rounds since 2006, including 7 rounds since end-2009, cVDPV2 transmission persisted in Kano and several other states in 2010–2011. The efforts to provide programmatic support from all levels of government need to be further strengthened in order to decrease population susceptibility. Although surveillance indicators are meeting targets at the state level, performance is assessed as intermediate. Gaps in AFP surveillance are indicated by a high proportion of WPV and cVDPV2 isolates not having close genetic linkages (missed chains of transmission), particularly since early 2010. Surveillance gaps in Nigeria could be due to lapses in AFP detection below the state level or among population subgroups (e.g., migrants), or in case investigation. Rapid field reviews of surveillance performance have indicated many areas that need improvement within the evaluated states. Incidents of civil unrest were associated with and followed elections in early 2011 and disrupted SIA implementation in some areas. In late 2011, extremist activities targeted government and international facilities. For these and programmatic reasons, the assessed moderate risk may underestimate the current situation. WPV circulation in Nigeria remains a major challenge to the success of GPEI in Africa.

Current Quarter	3rd Qrt. Report
Overall risk of failure to detect and interrupt WPV transmission	Overall risk of failure to detect and interrupt WPV transmission
Moderate	**Moderate**

GPEI MPI	end-2010	<10% 0-dose children (per NPAFP data) in each of the 12 high-risk states (including the 8 persistent transmission states)
	end-2011	>80% of children with ≥3 doses of OPV (per NPAFP data) in each of the 12 high-risk states (including the 8 persistent transmission states)
	end-2011	<10% missed children in at least 90% of the Local Government Areas during at least 4 SIAs in each of the 12 high-risk states

Nigeria: Wild poliovirus (WPV) cases and circulating vaccine-derived polioviruses (cVDPV), onset 1 January – 31 December 2011, and 12-month immunization indicators among non-polio AFP cases as of 27 December 2011



Countries with Re-Established Transmission

GPEI Global Milestone: By the end-2010, cessation of all 're-established' poliovirus transmission (validated when ≥12 months without a case genetically linked to the re-established virus):

Assessment: missed

- Sudan and South Sudan: on track
- Angola, Chad, and the Democratic Republic of the Congo: missed

ANGOLA

Immunization						Surveillance			
12-month immunization indicator			National		Immunization Performance	Percent of states / provinces with:		Virology	Surveillance Performance
District: % missed children in SIAs*	Province: % missed children in SIAs**	Overall 12-month immunization indicator	POL3	0-dose		NPAFPR >= 2***	Adeq. Stools >= 80%***		
Intermediate	**Intermediate**	**Intermediate**	**92**	**12.3**	**Intermediate**	**88.9**	**94.4**	**Little**	**Intermediate**

* 12-month district immunization indicator: Based upon Angola's 2011 MPI for immunization but using available data from SIAs conducted during the previous 12 months (1 Jan 2011 - 31 Dec 2011). Additional details in the 4th Quarter 2011 Progress Report of the GPEI Process Indicators for 2011 and Methods Supplement.

**12-month provincial immunization indicator: Based upon available data from SIAs conducted in all provinces in Angola except the provinces of Luanda, Benguela, and Kwanza Sul (MPI provinces) during the previous 12 months (1 Jan 2011 - 31 Dec 2011). The provinces of Luanda, Benguela, and Kwanza Sul were omitted given their consideration in the 12-month district immunization indicator. Additional details in Methods Supplement.

*** based on the upper 90% confidence limit

Angola is assessed to have a moderate risk of failure to detect and interrupt WPV transmission by the end of 2012. Five WPV1 cases from 2 provinces in Angola have been confirmed, thus far, during 2011. Four of the 5 cases occurred in the southern province of Kuando-Kubango. The most recent of these 4 cases had an onset date of 27 March. These 4 cases represent continued circulation of a 2007 WPV1 importation from India and marked the 4th consecutive year of transmission of the imported virus. Notably, at the time of this report, nearly 10 months have passed since the onset of the last of the 4 cases which suggests that the chain of transmission may be interrupted. The fifth and most recent WPV1 case confirmed in Angola in 2011 (onset date of 7 July) occurred in the northern province of Uige and represents a cross-border importation of wild poliovirus from a nearby district in the Democratic Republic of the Congo (DRC). The situation has markedly improved compared to 2010 when there were 33 confirmed cases of WPV1 from nine different provinces.

Because 2011 saw circulation of WPV outside of the provinces highlighted in the 2010-2012 Strategic Plan MPI for Angola (i.e., Luanda, Benguela, and Kwanza Sul), this risk assessment continues to include analyses of SIA IM data, when available, from all of Angola's provinces. SIA IM data aggregated at the district and provincial levels and analyzed according to the risk assessment algorithm indicate continued overall improvement in SIA implementation. In contrast to the overall trend of improvement in the country, it must be noted that IM data from SIAs conducted throughout 2011 indicate that districts in Luanda province consistently have had proportions of missed children well above the 10% MPI criterion. LQAS data are not yet available for Angola to compare with IM results. Overall immunization performance for the current period of analysis is intermediate, an improvement from weak performance noted in all previous risk assessments made in 2011. Five SIAs (3 on the national level) in the last 12 months provided type 3-containing OPV, which mitigate the risk of WPV3 transmission if introduced.

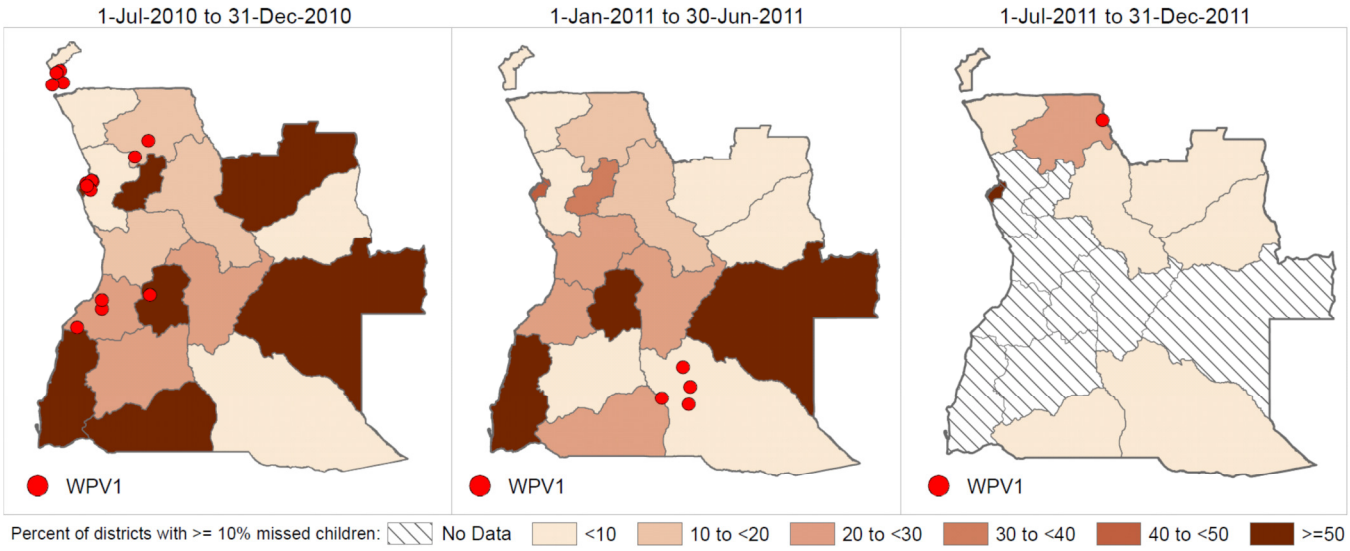
A high proportion of NPAFP cases (6.6%) are lacking vaccine dose history, which limits the quality of NPAFP dose data. However, the high 0-dose (12.3%) and low 4+ (32%) proportions among children with NPAFP are inconsistent with the reported Pol3 of 92%, which apparently overestimates national coverage.

Surveillance performance is intermediate. The sub-national NPAFP rate performance indicator declined to 88.9% during the assessed period from 100% in the last 3 risk assessments, and limitations in specimen collection persist. Based on the close genetic linkage among the 2011 isolates from confirmed cases in Kuando-Kubango and between the imported virus in Uige province and other DRC viruses, there is little indication of gaps in surveillance where the 2011 confirmed polio cases occurred. Being the historical epicenter of transmission and with documented gaps in surveillance in the past, there is concern about the current quality of surveillance in Luanda despite essentially meeting standard surveillance indicators.

Current Quarter	3rd Qrt. Report
Overall risk of failure to detect and interrupt WPV transmission	Overall risk of failure to detect and interrupt WPV transmission
Moderate	High

GPEI MPI	end-2010	<10% missed children in all districts of Luanda, Benguela, and Kwanza Sul during each SIA
	end-2011	<10% missed children in all districts of Luanda, Benguela, and Kwanza Sul during each SIA

Angola: Wild poliovirus type 1 (WPV1) cases with onset 1 July 2010 – 31 December 2011 and results of out-of-house independent monitoring for Supplemental Immunization Activities (SIAs) conducted during 1 July 2010 – 31 December 2011 by 6-month periods*



*For each 6-month period for each district in the country where data were available, independent monitoring data from all SIAs conducted were pooled, and the total number of missed children was divided by the total number of children observed to obtain an overall percentage of missed children for the district for the period. Then for each province in the country, the percentage of districts with ≥10% missed children was calculated. Color coding was assigned to ranges of percentages as indicated in the maps and legend above. For 1 July 2010 – 31 December 2010, data were available from 3 National Immunization Days (NIDs), for 1 January 2011 – 30 June 2011, data were available from 3 NIDs and 1 Sub-National Immunization Day (SNID), and for 1 July 2011 – 31 December 2011, data were available for 2 SNIDs. Not all districts were monitored in a given SIA, and different districts could have been monitored in different SIAs. To be included in the analysis, a district had to have monitoring data for at least one SIA during the 6-month period. Provinces with white color coding had no monitoring data for analysis. WPV1 cases are mapped at the district level.

The maps provided above illustrate the decreasing trend in WPV cases in Angola through 2011. Available IM data pooled in 6-month periods suggest an overall trend of some provinces with fewer districts with ≥ 10% missed children in SIAs. Only 2 SIAs were conducted in the 1 July 2011 – 31 December 2011 period and were in only certain provinces limiting the comparisons in trend. As noted previously, Luanda province has consistently had high percentages of districts with ≥10% missed children.

CHAD

Immunization						Surveillance			
12-month immunization indicator			National		Immunization Performance	Percent of states / provinces with:		Virology	Surveillance Performance
District: % missed children in SIAs*	Province: % missed children in SIAs**	Overall 12-month immunization indicator	POL3	0-dose		NPAFPR >= 2***	Adeq. Stools >= 80%***		
Weak	**Weak**	**Weak**	**63**	**10.3**	**Weak**	**100**	**66.7**	**Some**	**Weak**

* 12-month district immunization indicator: Based upon Chad's 2011 MPI for immunization but using available data from SIAs conducted during the previous 12 months (1 Jan 2011 - 31 Dec 2011). Additional details in the 4th Quarter 2011 Progress Report of the GPEI Process Indicators for 2010 and 2011 and Methods Supplement.

**12-month provincial immunization indicator: Based upon available data from SIAs conducted in all provinces in Chad except the provinces in N'Djamena and in the southern and eastern WPV transmission zones (MPI provinces) during the previous 12 months (1 Jan 2011 - 31 Dec 2011). The provinces in N'Djamena and in the southern and eastern WPV transmission zones were omitted given their consideration in the 12-month district immunization indicator. Additional details in Methods Supplement.

*** based on the upper 90% confidence limit

Chad has a high risk of failure to detect and interrupt WPV transmission by the end of 2012. There have been 131 cases of WPV (128 type 1 and 3 type 3) confirmed in 29 districts thus far for 2011 in Chad. This is in comparison to 2010 when 26 (11 type 1 and 15 type 3) cases were confirmed in 16 districts.

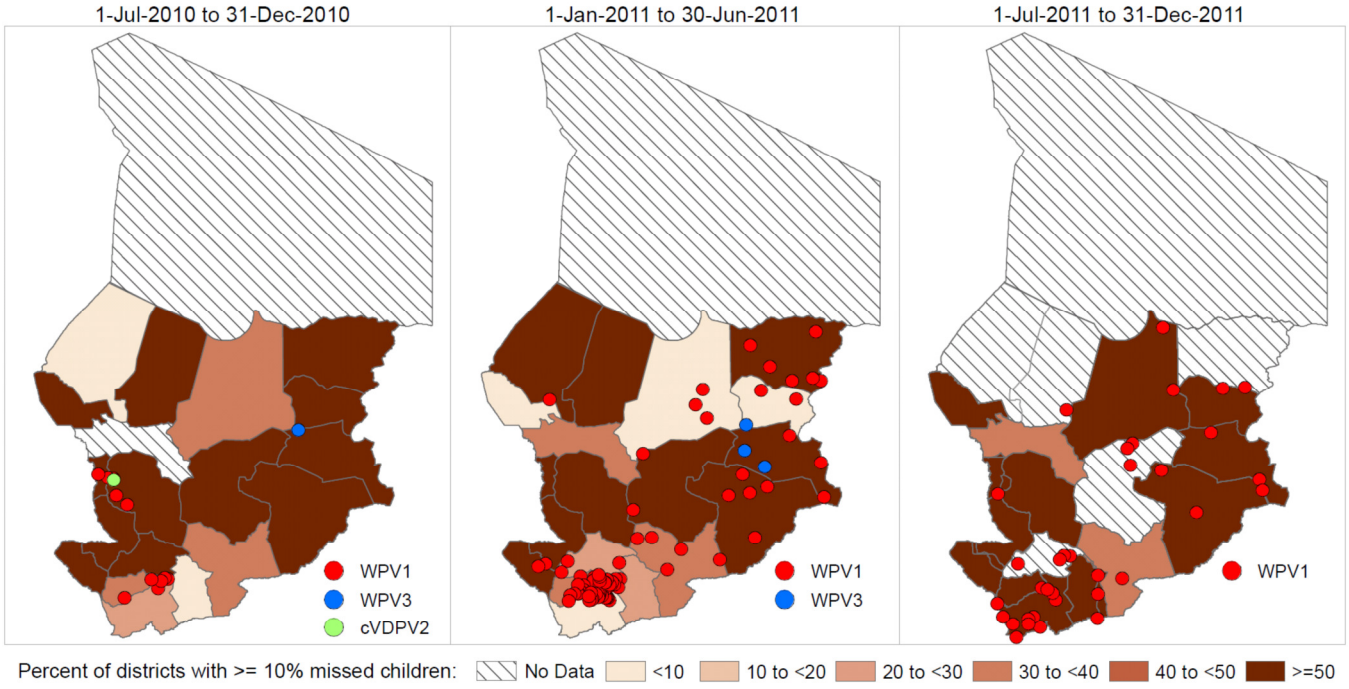
The Strategic Plan MPI addresses greater N'Djamena and the districts of the southern and eastern transmission zone, which have been the main (but not only) areas of transmission in 2010–2011. In 2011, transmission extended toward the center and eastern regions of the country. This risk assessment analyzed SIA monitoring data from these and all other provinces where available. SIA IM data aggregated at the district and provincial levels suggest little to no improvement in SIA quality over time, including in the SIAs conducted in late 2011. IM data from several districts in N'Djamena and Ouaddai provinces indicate percentages of missed children well over 10% in the October and November 2011 SIAs. In most of the other districts monitored in the time period of this assessment, the proportion of missed children has not met the 10% MPI criterion; however, LQAS results suggest that IM data overestimate coverage. Overall immunization performance remains weak. Although the latest WPV3 case had onset 10 March 2011, continued re-established transmission of WPV3 in eastern provinces remains a high risk. Extensive WPV1 transmission after 2010 importation into 2011and the occurrence of an imported cVDPV2 in 2010 from Nigeria indicate high susceptibility because of ongoing weaknesses in routine and SIA immunization coverage. SIAs since September 2010 have used bOPV, with partial use of tOPV and mOPV1in the greater N'Djamena area.

Surveillance performance is weak, with the percent of adequate stool samples dropping to 67%. Chad poses a high risk to the success of the GPEI to interrupt all WPV transmission by end-2012 because of the extensive circulation of WPV1 and risk of re-established transmission of WPV3, suboptimal surveillance, and lack of substantial improvement in SIA implementation quality.

Current Quarter	3rd Qrt. Report
Overall risk of failure to detect and interrupt WPV transmission	Overall risk of failure to detect and interrupt WPV transmission
High	**High**

GPEI MPI	end-2010	<10% missed children in greater N'Djamena and in the southern and eastern WPV transmission zones during each SIA in the second half of 2010
	end-2011	<10% missed children in greater N'Djamena and in the southern and eastern WPV transmission zones during each SIA

Chad: Wild poliovirus type 1 (WPV1), wild poliovirus type 2 (WPV2), and circulating vaccine derived poliovirus type 2 (cVDPV2) cases with onset 1 July 2010 – 31 December 2011 and results of out-of-house independent monitoring for Supplemental Immunization Activities (SIAs) conducted 1 July 2010 – 31 December 2011by 6-month periods*



*For each 6-month period for each district in the country where data were available, independent monitoring data from all SIAs conducted were pooled, and the total number of missed children was divided by the total number of children observed to obtain an overall percentage of missed children for the district for the period. Then for each province in the country, the percentage of districts with ≥10% missed children was calculated. Color coding was assigned to ranges of percentages as indicated in the maps and legend above. For 1 July 2010 – 31 December 2010, data were available from 6 Sub-National Immunization Days (SNIDs), for 1 January 2011 – 30 June 2011, data were available from 3 National Immunization Days (NIDs) and 3 SNIDs, and for 1 July 2011 – 31 December 2011, data were available for 4 NIDs. Not all districts were monitored in a given SIA, and different districts could have been monitored in different SIAs. To be included in the analysis, a district had to have monitoring data for at least one SIA during the 6-month period. Provinces with white color coding had no monitoring data for analysis. WPV1, WPV3, and cVDPV2 cases are mapped at the district level.

The maps provided above show the increasing number and spread of WPV type 1 cases in 2011 relative to the second half of 2010. Available IM data pooled in 6-month periods do not suggest an overall trend of provinces having more districts with <10% missed children in SIAs.

DEMOCRATIC REPUBLIC OF THE CONGO

Immunization				Surveillance			
12-month immunization indicator *	National		Immunization Performance	Percent of states / provinces with:		Virology	Surveillance Performance
% missed children in SIAs	POL3	0-dose		NPAFPR >=2**	Adeq. Stools >=80%**		
Intermediate	**72**	**6**	**Intermediate**	**100**	**54.6**	**Little**	**Weak**

* 12-month immunization indicator: Based upon DRC's revised 2011 MPI for immunization but using available data from SIAs conducted during the previous 12 months (25 Nov 2010 - 10 Nov 2011). Additional details in the 4th Quarter 2011 Progress Report of the GPEI Process Indicators for 2011 and Methods Supplement.

** based on the upper 90% confidence limit

The Democratic Republic of the Congo (DRC) has a high risk of failure to detect and interrupt WPV transmission by the end of 2012. Thus far, 92 cases of WPV1 were confirmed in DRC in 2011 in six different provinces. Re-established transmission of WPV1 persisted in Katanga province in 2011; 12 cases have been confirmed in five districts within the province, with 18 November 2011 as the most recent date of onset. One confirmed case in neighboring Maniema province had an onset of 28 November 2011 and represents the most recent case confirmed in the country. The viruses isolated in these two provinces are from a single, genetic cluster that was detected in 2010 after having been detected last in eastern DRC in mid-2008. Two cVDPV2 cases were confirmed in 2011, both from Katanga province.

The 2011 WPV1 cases in Bandundu (22 cases), Bas Congo (22 cases), Kasai Occidental (2 cases), and Kinshasa (33 cases) provinces represent continued transmission after importations from Angola and the Republic of the Congo in 2010. Among these 4 provinces only Bandundu and Bas Congo have had confirmed WPV1 cases with onset in the last 6 months, which suggests a real contraction in transmission; the most recent case (Bandundu Province) had an onset date of 29 September 2011.

There were numerous sub-national SIAs during the 12-month period being assessed, primarily using mOPV1, in 2011. In addition, there were 3 national SIAs during which a type 3-containing OPV was administered. SIA IM data aggregated at the provincial level and analyzed according to the risk assessment algorithm indicate SIA performance at the same level (intermediate) as in the most recent risk assessment. An analysis of IM data collected during NIDs only and aggregated at the provincial level, indicated only 2 (Bandundu and Orientale) of the 7 provinces in the MPI had <10% missed children in all 3 NIDs. LQAS surveys have not yet been conducted in DRC. In the north of Katanga province where recent WPV cases have occurred, parents in certain religious groups are refusing vaccination for their children; analyses of the situation are ongoing to determine how this will impact efforts to eliminate transmission in the province and what can be done to improve vaccination acceptance.

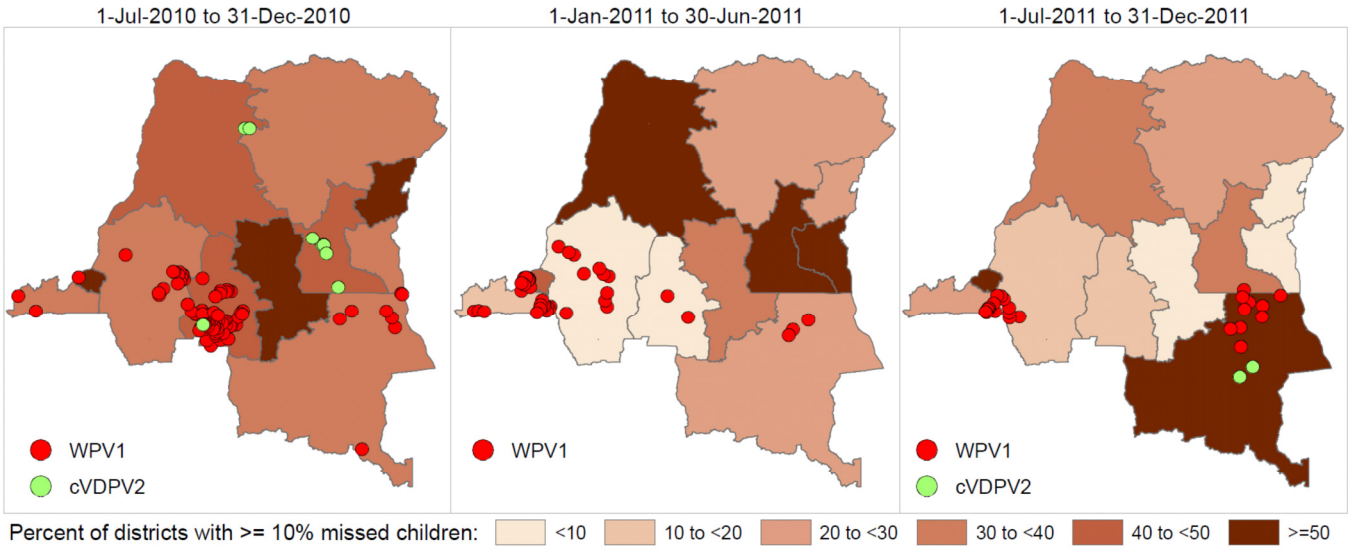
For the current 12-month period, the proportion of children with NPAFP with 0-dose histories has again decreased in this quarter. However, a high proportion of NPAFP cases (12.2%) continue to lack vaccine dose history, which limits the quality of 0-dose data. Immunization performance is intermediate in this assessment.

Surveillance performance continues to be weak; although sub-national NPAFP rates have met standards, there has been chronically poor collection of adequate specimens. Caution will be needed in interpreting the last date of WPV case onset as an indicator of the end of transmission in several provinces unless sub-national surveillance indicators improve.

Current Quarter	3rd Qrt. Report
Overall risk of failure to detect and interrupt WPV transmission	Overall risk of failure to detect and interrupt WPV transmission
High	High

GPEI MPI	end-2010	>80% adequate specimens in all provinces
	end-2010	AFP rate >2 in all provinces
	end-2010	<10% missed children in each SIA in Orientale, North & South Kivu
	end-2011	>80% adequate specimens in all provinces
	end-2011	AFP rate >2 in all provinces
	end-2011	<10% missed children during at least 4 SIAs in Bandundu, Bas-Congo, Katanga, Kinshasa, North Kivu, Orientale, and South Kivu (amended Q3 2011)

Democratic Republic of the Congo: Wild poliovirus type 1 (WPV1) and circulating vaccine derived poliovirus type 2 (cVDPV2) cases with onset 1 Jul. 2010 – 31 Dec. 2011 and results of out-of-house independent monitoring for Supplemental Immunization Activities (SIAs) conducted 1 Jul. 2010 – 31 Dec. 2011 by 6-month periods*



*For each 6-month period for each district in the country where data were available, independent monitoring data from all SIAs conducted were pooled, and the total number of missed children was divided by the total number of children observed to obtain an overall percentage of missed children for the district for the period. Then for each province in the country, the percentage of districts with ≥10% missed children was calculated. Color coding was assigned to ranges of percentages as indicated in the maps and legend above. For 1 July 2010 – 31 December 2010, data were available from 5 Sub-National Immunization Days (SNIDs), for 1 January 2011 – 30 June 2011, data were available from 2 National Immunization Days (NIDs) and 4 SNIDs, and for 1 July 2011 – 31 December 2011, data were available for 1 NID and 6 SNIDs. Not all districts were monitored in a given SIA, and different districts could have been monitored in different SIAs. To be included in the analysis, a district had to have monitoring data for at least one SIA during the 6-month period. Provinces with white color coding had no monitoring data for analysis. WPV1 and cVDPV2 cases are mapped at the district level.

The maps provided above illustrate the concentration of WPV1 cases in the 2nd half of 2011 in DRC in Bas Congo and Bandundu provinces in the west and Katanga and Maniema provinces in the east. Available IM data pooled in 6-month periods suggest a trend in some provinces with fewer districts with ≥10% missed children in SIAs. Only 1 NID was conducted in the 1 July 2011 – 31 December 2011 period and thus some provinces only had one round of IM data for that period of analysis. As noted previously, special attention is being given to Katanga Province to resolve the issue of high proportions of missed children being reported through IM data. Kinshasa Province has consistently had a high percent of districts with ≥10% missed children.

SOUTH SUDAN and SUDAN

Immunization				Surveillance			
12-month immunization indicator *	National		Immunization Performance	Percent of states / provinces with:		Virology	Surveillance Performance
% missed children in SIAs	POL3**	0-dose		NPAFPR >= 2**	Adeq. Stools >= 80%**		
Intermediate	**90**	**3.1**	**Intermediate**	**96**	**100**	**NA†**	**Intermediate**

* 12-month immunization indicator: Based upon South Sudan's 2011 MPI for immunization but using available data from SIAs conducted during the previous 12 months (1 Jan 2011 - 31 Dec 2011). Additional details in the 4th Quarter 2011 Progress Report of the GPEI Process Indicators for 2011 and Methods Supplement.

**POL3 based on WHO/UNICEF estimate for Sudan since separate estimates for South Sudan are not yet available.

*** based on the upper 90% confidence limit

† no viruses isolated in the previous period; however, virus detected in environmental samples in Egypt related to previous circulation in Sudan

South Sudan became an independent country on 9 July 2011 and was previously designated as southern Sudan. Here, the country designation Sudan refers to the northern states of former Sudan. South Sudan is assessed to have a moderate risk of failure to detect and interrupt WPV transmission by the end of 2012. South Sudan has not met its MPI immunization criterion on the basis of available SIA monitoring data for the previous 12 months (data from 3 of 4 rounds analyzed, December data being currently unavailable) and has intermediate immunization performance by this assessment. The resurgence in confirmed circulation of re-established WPV transmission in 2008–2009 began and ended in South Sudan but also involved Sudan. The latest confirmed WPV case in both countries occurred in South Sudan in June 2009 and surveillance performance indicators for South Sudan have met standards for >12 months following that case. Surveillance performance indicators have also met standards in Sudan within acceptable limits. However, WPV1 was found by environmental surveillance in Aswan, Egypt, in a December 2010 sample, with closest relationship to a 2009 Khartoum WPV1 that was part of the Sudan 2008/2009 WPV outbreak. Since this finding, no other samples (from human stools or environmental sampling) have tested positive for WPV suggesting interruption of WPV circulation in former Sudan. However it must be noted that there are areas with limited access because of remoteness and/or lack of security within South Sudan; it is possible that undetected transmission continues. Undetected circulation in under-immunized populations in Sudan is also possible. Surveillance performance for South Sudan is intermediate. Ongoing transmission of WPV1 in the eastern provinces of Chad poses a large risk of importation into the Darfur areas of Sudan, with the potential for further transmission. While an assessment of a moderate risk of failure to detect and interrupt WPV transmission may seem severe given the progress to date, inaccessible and insecure areas are of concern.

Current Quarter	3rd Qrt. Report
Overall risk of failure to detect and interrupt WPV transmission	Overall risk of failure to detect and interrupt WPV transmission
Moderate	**Moderate**

GPE MPI	end-2010	●	>80% adequate specimen rates in all states
	end-2010	●	Non-polio AFP rate >2 in all states
	end-2010	●	<10% missed children in each state during each SIA
	end-2011	●	>80% adequate specimen rates in all states
	end-2011	●	AFP rate >2 in all states
	end-2011	●	<10% missed children in each state during each SIA

Countries with Imported Cases

GPEI Global Milestone: By mid-2010, cessation of all polio outbreaks with onset in 2009 (validated when ≥ six months without a case genetically linked to a 2009 importation):

Assessment: on track

GPEI Global Milestone: Cessation of new outbreaks within 6 months of confirmation of index case

Assessment: missed

- 2011 importations: on track
- 2010 importations: missed (Mali sustained outbreak of WPV3 for > 6 months)

Control of 2011 WPV outbreaks appears to be on track, albeit with surveillance concerns and no detailed data available to assess the risk of failure to detect and interrupt WPV transmission in China.

All countries with WPV outbreak cases occurring in the previous 12 months have surveillance limitations, so caution is needed in interpreting the length of time since the latest identified WPV case. Nonetheless, all outbreaks in which the latest confirmed case was before early-July 2011 are no longer considered active.[3]

Substandard surveillance also limits confidence in the reports of "no recently identified WPV3 cases" in some West African countries (e.g., Guinea and Côte d'Ivoire). However, progress has been made in controlling these outbreaks.

In addition to uncertainties about the accuracy of some IM data, some countries also have a high proportion of NPAFP cases with unknown dose history, which limits the interpretation of 0-dose data.[4]

Among countries in the African "importation belt" without recent cases, Senegal, Sierra Leone, and Uganda are at high risk of failure to detect and interrupt WPV within 6 months of confirmation if a new importation would occur.

Country-specific summaries

Active WPV outbreaks as of 17 January 2012 ordered by date of latest case from present

Countries with imporations since mid-July 2011	Date of onset of first outbreak case	Date of laboratory confirmation of outbreak	Date of onset of latest WPV related to importation	Days after lab confirmation of outbreak until latest case	Earliest validation date for >6 months without cases*
Central African Republic (WPV1)	19-Sep-11	4-Oct-11	8-Dec-11	65	**8-Jun-12**
Niger (WPV1)	9-Jul-11	23-Aug-11	21-Nov-11	90	**22-May-12**
Niger (WPV3)	30-Oct-11	30-Nov-11	30-Oct-11	(before)	**30-Apr-12**
China (WPV1)	3-Jul-11	26-Aug-11	9-Oct-11	44	**9-Apr-12**
Guinea (WPV3)	14-May-11	1-Jun-11	3-Aug-11	63	**3-Feb-12**
Kenya (WPV1)	30-Jul-11	25-Aug-11	30-Jul-11	(before)	**30-Jan-12**
Côte d'Ivoire (WPV3)	27-Jan-11	31-Mar-11	24-Jul-11	115	**24-Jan-12**

* Per CDC recommendations, pending additional month for outstanding surveillance/laboratory results

[3] As reported by WHO, note that CDC considers >6 months without cases, allowing an additional 30 days for full laboratory data availability. Outbreaks are considered inactive by CDC if no confirmed case was reported after 17 June.
[4] This includes Burundi (20.5%), Central African Republic (29.8%), Côte d'Ivoire (20.9%), Ethiopia (52%), Guinea-Bissau (11.1%), Kenya (20.9%), Mozambique (27.7%) and Senegal (19%).

- *Central African Republic:* The Central African Republic (CAR) is experiencing an active outbreak despite SIAs in advance of the four confirmed cases. With intermediate immunization and surveillance performance, CAR has a moderate risk of failure to detect and interrupt WPV circulation within 6 months of confirmation.

- *Niger:* Niger has a moderate risk of failure following new WPV1, WPV3 and cVDPV2 importation cases, but faces the risk of repeated WPV importations from Nigeria and Chad. Although not confirmed at the time of this report, two of the most recent viruses (WPV3 with 30 October 2011 onset, and WPV1 with 17 November 2011 onset) may be reassigned to Nigeria.

- *China:* In China, despite annual risk mitigation SIAs in high-risk areas, an outbreak is currently underway in Xinjiang province with WPV1 imported from Pakistan. There have been 21 reported cases as of 17January 2012, with onset through 9 October 2011; of these, 11 cases were in persons >15 years of age. The onset of the first case was 3 July 2011, and the outbreak was confirmed 26 August. Response tOPV immunization began 8 September 2011 for the entire province, with southern prefectures vaccinating children <15 years of age. Persons aged 15-40 years in southern prefectures were targeted beginning 13 September because of confirmed cases in adults. After an additional tOPV round, one mOPV1 round was conducted in November. With only a national Pol3 indicator and the investigation ongoing, there are not sufficient data to assess the risk of failure to detect and interrupt WPV transmission within 6 months of confirmation.

- *Guinea:* Guinea has weak surveillance performance and is assessed at moderate risk of failure to detect and interrupt WPV transmission within 6 months of confirmation. The reported independent monitoring data of SIA rounds in Guinea historically indicate implausibly low proportions of missed children.

- *Kenya:* WPV1 has been isolated from a case in Kenya with onset 30 July 2011. The virus is most closely related to Uganda 2010 WPV1 that was in turn most closely related to the Kenya 2009 WPV1 outbreak. Kenya currently has intermediate immunization performance (a high proportion of NPAFP cases have unknown dose history), intermediate surveillance performance, and is considered at moderate risk of failure to detect and interrupt WPV transmission.

- *Côte d'Ivoire:* In Côte d'Ivoire, there was delay in response immunization after onset and identification of the first WPV3 case (onset of 27 January 2011) because of civil unrest. The most recently identified case occurred 24 July 2011; although this case occurred just before the third SIA, there have been many subsequent SIAs. Côte d'Ivoire is at moderate risk of failure to detect and interrupt transmission, with reportedly high immunization performance with bOPV and weak surveillance performance.

- *Uganda:* Although the most recent case confirmed in Uganda occurred >12 months ago, immunization and surveillance performance are weak, and Uganda remains at high risk of failure to detect and interrupt WPV.

- *Congo and Gabon:* Although the latest reported WPV1 cases in the Congo and Gabon occurred >6 months ago, both countries have weak surveillance performance when applying Strategic Plan criteria. Since immunization performance is weak in Gabon and intermediate in Congo, the assessed risk of failure to detect and interrupt WPV transmission in both is high.

- *Mali:* Mali had two WPV3 importation outbreaks during 2010 and 2011 (see below). In the 2010 outbreak, >6 months passed from outbreak confirmation to the latest case, which missed the milestone for new outbreaks. There were long periods between related WPV cases during the beginning of the 2010 outbreak. However, Mali currently has low risk of failure to detect and interrupt WPV transmission, with intermediate surveillance performance.

Inactive WPV3 outbreaks in Mali as of 17 January 2012 ordered by date of latest case from present

Mali: cases in 2011 following more than one WPV3 imporation	Date of onset of first outbreak case	Date of laboratory confirmation of outbreak	Date of onset of latest WPV related to importation	Days after lab confirmation of outbreak until latest case	Earliest validation date for >6 months without cases*
Mali (WPV3 2010)	17-Sep-10	15-Oct-10	23-Jun-11	251	**23-Dec-11**
Mali (WPV3 2011)	8-Feb-11	2-Mar-11	10-Jun-11	100	**10-Dec-11**

* Per CDC recommendations, pending additional month for outstanding surveillance/laboratory results

- *Europe,* Kazakhstan, Russian Federation, Tajikistan, and Turkmenistan outbreaks are no longer active and AFP surveillance is no longer expected to meet indicators applied to endemic Regions and active outbreaks.

- *Cameroon (case reported after the close of data analyzed in this report):* On 18 January 2012 a WPV3 with an onset date of 17 November 2011 was reported. The case is assigned to the northern most provinces (Extreme-Nord) which shares a border with both Chad and Nigeria, the assigned commune (Goulfey) shares a border with Chad. With strong immunization performance and weak surveillance performance, Cameroon has a moderate risk of failure to detect and interrupt WPV circulation within 6 months of confirmation. The weak immunization performance is primarily based on poor stool adequacy. For this case, the stool specimens reached the lab nearly 7 weeks after onset.

Assessment of risk for the outbreak countries and importation belt countries

	Country	Immunization							Surveillance				Current Quarter	3rd Qrt. Report
		12-month immunization indicator [1]				National		Immunization Performance	Percent of states / provinces with:		Virology [3]	Surveillance Performance	Overall risk of failure to detect and interrupt WPV transmission	Overall risk of failure to detect and interrupt WPV transmission
		Percent of missed children in type specific SIA												
		Type1		Type3					NPAFPR ≥ 2 [2]	Adeq. Stools ≥80% [2]				
		most recent SIA	2nd most recent SIA	most recent SIA	2nd most recent SIA	POL3	0-dose							
	Countries with WPV within the last 12 months													
1	Central African Republic	1.7	13.6	1.7	13.6	47	2.1	Intermediate	100	85.7	Little	Intermediate	Moderate	Moderate
2	China					99					Little		currently unable to assess risk	
3	Congo	13.4		13.4		90	15.8	Intermediate	80	72.7	Some	Weak	High	High
4	Côte d'Ivoire	5.3	4.8	5.3	4.8	81	2.1	Strong	100	42.1	Some	Weak	Moderate	Moderate
5	Gabon	22.6	29.3			44	9.1	Weak	100	55.6	N/A	Weak	High	High
6	Guinea	9.3	4.6	9.3	4.6	53	0	Strong	100	62.5	Little	Weak	Moderate	Moderate
7	Kenya	9.5	11.7	9.5		83	4.6	Intermediate	100	100	Some [4]	Intermediate	Moderate	High
8	Mali	6.9	6.8	6.9	6.8	73	1.4	Strong	100	88.9	Some	Intermediate	Low	Moderate
9	Niger	4.5	6.2	4.5	6.2	75	2.8	Strong	87.5	62.5	Little	Weak	Moderate	Moderate
	Countries without WPV in over 1 year - African continent													
1	Benin	12	11.7	12	11.7	83	4.9	Intermediate	91.7	100	N/A	Intermediate	Moderate	Moderate
2	Burkina Faso	7.8	6.9	7.8	6.9	94	3	Strong	100	84.6	N/A	Intermediate	Low	Low
3	Burundi					94	0	Strong	88.2	88.2	N/A	Intermediate	Low	Moderate
4	Cameroon	6.2	7.2	6.2	7.2	83	2.2	Strong	70	90	N/A	Weak	Moderate	Low
5	Eritrea					99	0	Strong	100	100	N/A	Strong	Low	Low
6	Ethiopia	17		17		86	3.6	Weak	90	90.9	N/A	Intermediate	Moderate [5]	High
7	Gambia	12.4	5.4	5.4		96	0	Intermediate	100	100	N/A	Strong	Moderate	Moderate
8	Ghana	4.7	7.3	4.7	7.3	94	0	Strong	90	100	N/A	Intermediate	Low	Moderate
9	Guinea-Bissau	2.3	1.9	2.3	1.9	73	0	Strong	100	42.9	N/A	Weak	Moderate	Moderate
10	Liberia	6.9	5.7	6.9	4	71	0	Strong	100	93.3	N/A	Intermediate	Low	Low
11	Mauritania	6	5.2	6	7.4	63	0	Strong	100	100	N/A	Strong	Low	Low
12	Senegal	12.1	14.8	12.1	14	70	6.4	Intermediate	72.7	90.9	N/A	Weak	High	Moderate
13	Sierra Leone	11	12.1	11	12.1	89	0	Intermediate	100	75	N/A	Weak	High	Low
14	Somalia					49	23.6	Weak	100	100	N/A	Strong	Moderate [5]	Moderate
15	Togo	11.4	13	11.4	13	92	4.2	Intermediate	100	100	N/A	Strong	Moderate	Moderate
16	Uganda	15	16.2	15		55	8.5	Weak	74.2	92.1	Some [4]	Weak	High	High
	Countries without WPV in over 1 year - outside of the African continent													
1	Kazakhstan [7]					98	0	Strong	100	100	N/A	Strong	Low	Moderate
2	Nepal	10.4	3.7	10.4	3.7	83	0	Intermediate	100	100	N/A	Strong	Moderate	Low
3	Russian Federation [7]					98	7.9	Intermediate	75.8	97.4	N/A	Weak	High	High
4	Tajikistan [7]					95	0	Strong	80	100	N/A	Intermediate	Low	Moderate
5	Turkmenistan [7]					96	0	Strong	83.3	100	N/A	Intermediate	Low	Moderate
	Countries with cVDPVs outbreak within the last 12 months AND not within the AFRO importation belt or a WPV importation country													
1	Mozambique					73	1.5	Weak	100	100	Some	Intermediate	Moderate [5]	Moderate [5]
2	Yemen					88	19	Weak	100	100	Little	Strong	Moderate [5]	Moderate [5]

[1] 12-month immunization indicator: Based upon the 2011 MPI for immunization for the "WPV importation belt" but using the two most recent SIAs conducted during the previous 12 months (SIAs conducted after 1-Jan-2011) and included countries outside of the "WPV importation belt" that had WPV outbreaks in 2009, 2010, or 2011. Additional details in the 4th Quarter 2011 Progress Report of the GPEI Process Indicators for 2010 and 2011 and Methods Supplement.

[2] Based on the upper 90% confidence limit.

[3] Virologic evidence indicates "little" or "some" evidence of missed chains of transmission.

[4] In Kenya, a single WPV case has been reported to date during the previous 12 months, not directly related to 2009 Kenya WPV circulation; this 2011 WPV is related to 2010 Uganda circulation but with substantial genetic distance, indicating weaknesses in AFP surveillance in Kenya, Uganda or both.

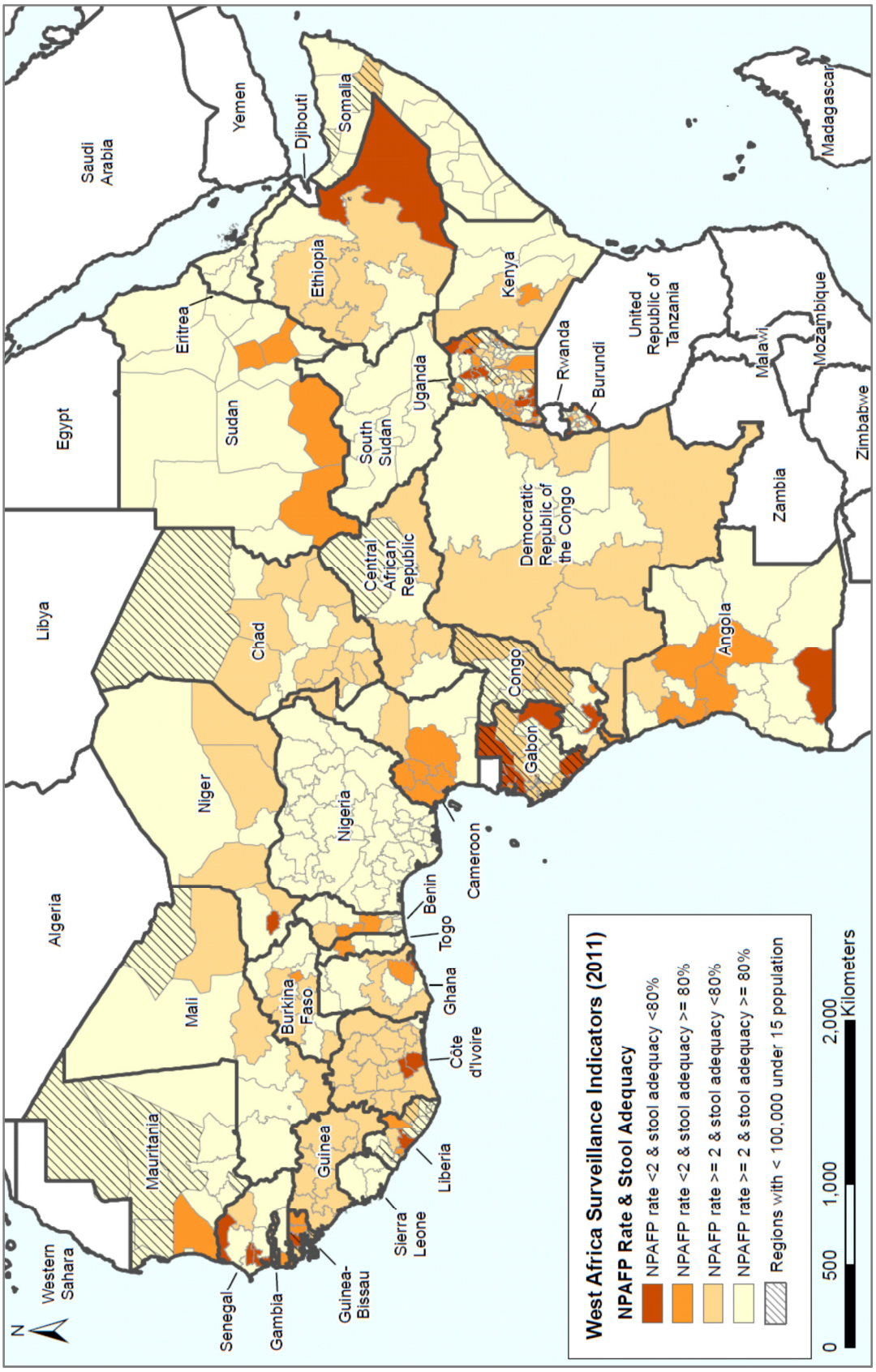
[5] No evidence of WPV circulation in > 6 months (refer to methods section)

[6] Evidence of WPV circulation within last 3 months and ≥3 months had elapsed from outbreak laboratory confirmation to the most recent case (refer to methods section).

[7] NPAFP Rate indicator calculated using the cut off of 1 per 100,000 children under 15 yrs. of age (90% confidence limit is not applied)

Type 3 specific criteria not applied to countries outside the African continent

Surveillance indicators from AFP cases with onset dates 28 December 2010 to 27 December 2011



Circulating VDPV Outbreak Countries

The following table shows confirmed circulating vaccine derived poliovirus (cVDPV) from AFP cases or case-contacts where the index case was negative. Information regarding cVDPV cases from counties with WPV that have been previously described in the report is not repeated.

During the 2011 fourth quarter, several new cases were reported, for Somalia and Yemen these cases all had onset dates in the third quarter. In Yemen, four more cases of cVDPV type 2 were identified for a total of 8 in 2011. The onset of the first case was on 8 April and onset of the latest case was on 26 August. The outbreak was confirmed 18 August. With weak immunization performance (notably high 0-dose in NPAFP cases) and strong surveillance performance, the risk of failure to detect and interrupt VDPV transmission is assessed as moderate (using criteria applied to WPV). However, normal routine immunization services have been interrupted during the recent civil unrest. In Somalia, 8 additional cases of cVDPV type 2 were identified for a total of 14 cases, with onset of the latest case on 10 July. With weak immunization performance and strong surveillance performance, the risk of failure to detect and interrupt VDPV transmission is assessed as moderate (using criteria applied to WPV), even though >6 months have passed since the latest case.

County	Serotype	2011 quartely cVDPV case counts				2011 total	Onset date of last case
		Jan-Mar	Apr-Jun	Jul-Sep	Oct-Nov		
Afganistan	2	1	0	0	0	**1**	11-Jan-11
Democratic Republic of the Congo	2	0	0	0	2	**2**	21-Oct-11
Mozambique *	1	1	1	0	0	**2**	02-Jun-11
Nigeria	2	5	7	10	8	**30**	19-Nov-11
Niger	2	0	0	0	1	**1**	11-Oct-11
Somalia	2	11	2	1	0	**14**	10-Jul-11
Yemen *	2	0	4	4	0	**8**	26-Aug-11

* Country not classified as: endemic, re-established, outbreak, and outside of AFRO importation belt